

REMARKS

Rejections Under 35 USC §103

Claims 2, 5, 8-12, 17, 18, 31 and 32 have been rejected under 35 USC §103(a) as being unpatentable over Soejima (US Patent No. 6,114,864) in view of Leedy (US Patent No. 5,103,557) and further in view of the article "Technical Report, Shin-Etsu Inter Connector, MT-Type" (Shin Etsu).

In response to the rejections the claims have been amended. In addition, the Examiner is asked to consider the arguments to follow.

Summary of the Invention

Independent claims 2, 8 and 12 are directed to an interconnect 10 (Figure 1) for testing a semiconductor component 18 (Figure 3B) having a bumped contact 16 (Figure 3B). Independent claim 31 is directed to a system (e.g., test system 100W-Figure 10) that includes the interconnect 10.

As shown in Figures 3A and 3B, the interconnect 10 includes a substrate 12B, and a contact 14B on the substrate 12B configured for electrical engagement with the bumped contact 16. The contact 14B includes a recess 20B in the substrate 12B, and a plurality of leads 22B cantilevered over the recess 20B configured to support the bumped contact 16 over the recess 20B during electrical engagement. As shown in Figure 3B, the leads 22B can include projections 28B for penetrating the bumped contact 16. As shown in Figure 3D, the leads 22B can also include an outer layer 46B formed of a material that is non-bonding relative to the bumped contact 16. In the elected

embodiment the outer layer comprises a conductive polymer, such as a carbon film or a metal filled silicone.

Argument

The claims have been amended to emphasize features that are not taught or suggested by the cited combination of Soejima et al., Leedy and Shin Etsu. These features in combination with other claimed features make the interconnect and system unobvious over the cited art.

Independent claim 2 states that each lead includes "a conductive polymer outer layer configured to provide a non-bonding surface for the bumped contact during the electrical engagement". Antecedent basis for this recitation is contained on page 13, line 27, to page 14, line 2 of the specification. It is submitted that the cited combination of references does not suggest or teach an interconnect contact having a conductive polymer outer layer, configured to provide a non-bonding surface for a bumped contact on a component under test.

In support of the 35 USC §103 rejections the Office Action states: "Leedy teaches (col 19, ln 38-col 21, ln 11) the use of a conductive polymer outer layer upon the surface of an interconnect for testing a semiconductor component."

However, the conductive polymer layer in Leedy is not configured to provide a non-bonding surface for the contacts on the device under test. In particular, column 21, lines 3-11 of Leedy teach specific conductive polymers, but there is no indication that these materials function to provide a non-bonding surface for the contacts on the device being tested. Some polymers, such as anisotropic adhesives,

function to bond to metal contacts, such that it cannot be assumed that the cited materials in Leedy inherently provide a non-bonding surface.

Further, Leedy specifically teaches covering the conductive polymer layer with a metal layer, such that the conductive polymer layer is not an outer layer, and would not provide a non-bonding surface. Specifically, as shown in Figure 33 of Leedy, the conductive polymer layer 509 is optionally covered by a layer of metal 510 such as gold, copper or titanium (column 20, line 64 to column 21, line 2 of Leedy). All of these metals would have an affinity for bumped contacts made of metal, and particularly for bumped contacts made of solder. This affinity would tend to bond the layer of metal 510 to the contacts on the device. Gold in particular is well known for bonding applications, such as reflow bonding and cold welding applications. Leedy thus teaches a bonding outer layer, which in effect teaches away from a non-bonding outer surface, as presently claimed.

In order to further emphasize this non-bonding feature, dependent claim 5 has been amended to state that the bumped contact comprises solder (antecedent basis on page 13, line 30 of the specification), and that the conductive polymer layer comprises carbon or silicone (antecedent basis on page 14, lines 1-2 of the specification). In regard to these material, Shin-Etsu was cited as teaching a metal filled silicone. However, the silicone in Shin-Etsu is a base material, and not an outer layer configured to provide a non-bonding outer surface as presently claimed. In this regard, please note Figure 2 of Shin-Etsu which illustrates brass wires in silicon rubber for making electrical connections. The silicon rubber supports the brass wires, but they are not covered by a non

bonding outer layer of silicone as presently claimed. The silicon rubber in Shin-Etsu thus has a different structure, and a different function, than the presently claimed conductive polymer layer.

Independent claim 8 states that each lead comprises "a projection configured to penetrate the bumped contact and a conductive polymer outer layer on the projection configured to provide a non-bonding surface for contacting the bumped contact". Antecedent basis for the "projection" and "penetrate" recitations is contained on page 4, lines 24-26 of the specification. Dependent claim 10 states the projection comprises a blade (e.g., blade 28B in Figure 3D). Although penetrating contacts are known in the art, penetrating contacts covered with a non-bonding conductive polymer layer, are submitted to be novel and unobvious over the art.

Independent claim 20 recites a "bumped solder contact", and that each lead comprises "a metal and a conductive polymer outer layer on the metal configured to provide a non-bonding outer surface for contacting the bumped solder contact". Claim 20 is submitted to be novel and unobvious for essentially the same reasons as dependent claim 5.

Independent claim 31 includes recitations similar to claim 2 in a "system". Independent claim 31 is submitted to be novel and unobvious for essentially the same reasons as claim 2.

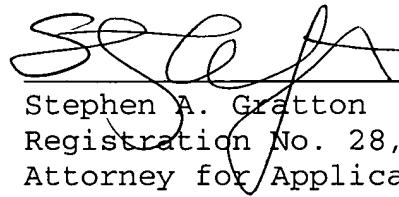
Conclusion

In view of the amendments and arguments, favorable consideration and allowance of claims 2, 5, 8-12, 17, 18,

31 and 32 is requested. An Information Disclosure Statement is being filed concurrently with this Response. Should any issues remain, the Examiner is asked to contact the undersigned by telephone.

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Respectfully submitted:



Stephen A. Gratton
Registration No. 28,418
Attorney for Applicant

2764 South Braun Way
Lakewood, CO 80228
Telephone: (303) 989 6353
Fax: (303) 989 6538

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Stephen A. Gratton
Attorney for Applicants